PROJECT NUMBER: 1806
PROJECT TITLE: New Tobacco Processes
SECTION LEADER: S. R. Wagoner
PERIOD COVERED: April, 1989

I. PROJECT ART - PILOT PLANT SUPPORT

A. **Objective**: To provide processes for converting and casing stem materials for the Bermuda Hundred Pilot Plant.

B. **Results**: Batches of CRS were cased with monopotassium citrate and shipped to the Bermuda Hundred Pilot Plant on a daily basis. These batches consisted of the standard Louisville CRS cut at 150 cpi, as well as Louisville material cut at 53 and 90 cpi. In addition, D Pilot Plant produced CRS (150 cpi) from blends of Louisville stem feedstock and VST-1 grade stems at ratios of 60:40 and 80:20 for use at the Pilot Plant.

C. **Plans**: Continue to produce stem products as required by Project ART.

II. PROJECT ART - COMMERCIAL PROCESS DEVELOPMENT

A. **Objective**: To conduct trials providing information for development of the ART commercial process.

B. **Results**: Project personnel continued to assist Bermuda Hundred with equipment commissioning in the filler and stem processing areas. Both filler and stems were cased with the appropriate solutions in the commercial facility for use at the Pilot Plant. Also, Bermuda Hundred observed a temperature increase in the AB solution after preparation. This was confirmed through laboratory experimentation and calculations based on the enthalpies of the reactants to be caused by the resolubilization of the CO_2 from the headspace into the solution.

Tests were repeated in the MC DIET facility to check for potential nicotine contamination of extracted filler. As before, no increase in nicotine was produced by placing a small amount of extracted filler in an impregnator and running a normal cycle. The conveyor exit the Vibrabin was also "swabbed" as before. (Previously, this had shown a nicotine increase from 0.10 to 0.15%.) This test was conducted after the conveyor had been wiped clean, and no nicotine pickup was noted.

Installation of the Infrared Engineering on-line nicotine/OV monitor in the Semiworks has been delayed due to a faulty keypad on the unit. A replacement is scheduled to be delivered the week of 5/1.

C. **Plans**: Assist in the coordination of the Bermuda Hundred start-up with respect to product qualification.

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Evaluate the Infrared Engineering monitor (nicotine, moisture) after installation in a Pilot Plant situation.

III. BINDER DEVELOPMENT

A. **Objective**: Develop methods to produce binder systems for the foam bonded ends and low density rod programs.

B. **Results**: A NaCMC (7LFPH) of slightly higher molecular weight was profiled in the laboratory for foam collapse and solution viscosity. It appears from the lab data that this material may be useable; however, it is at the upper end of acceptable molecular weight. This material costs $0.50/lb less that the NaCMC 7L2P that has been qualified in the foam bonded ends process. Also, additional lab work was done on dextrans with molecular weights of 15-20K and 50K.

C. **Plans**: Continue to provide support as required to the above programs.

IV. HAUNI HT TUNNEL EVALUATION

A. **Objective**: Determine the effect of steam conditioning tobacco materials in the Hauni HT steam tunnel prior to drying.

B. **Results**: In the spot reduction program, the following critical spots/2000 cig values have been determined by the QE SOLVIC device with five days aging:

	Test 1	Test 2
DIET feedstock		
Control	45.2	32.4
Hauni treated	28.3	7.3
DIET Product		
Control	7.8	15.1
Hauni treated	3.3	1.1
Menthol on filler		
Control	9.0	18.4
Hauni treated	13.2	10.5
Menthol on foil ,		
Control	11.2	39.5
Hauni treated	12.2	37.2

Thus, the DIET materials showed significant reductions in spots compared to the untreated controls, while the results from the menthol runs are not as conclusive.

A memo outlining the test plans for evaluation of the Hauni tunnel as a means of obtaining cigarette firmness improvements was issued. The corresponding Semiworks requests were submitted.

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C. **Plans**: Conduct 30 day spot counts on all menthol samples.

Conduct a third set of tests processing DIET feedstock and product through the HT tunnel for physical and subjective testing.

IV. TMCI-ASTA SHEET

A. **Objective**: To develop a subjectively and physically acceptable reconstituted tobacco sheet using the TMCI process and PM-RCB technology for international application.

B. **Results**: Laboratory studies demonstrated that the removal of air entrained in ASTA slurry significantly improved sheet quality by eliminating pinholes in the sheet. Sheet quality was also seen to improve by removal of the calcium phosphate film on the casting surface and the application of a release agent, both of which improved doctoring from the casting surface.

A means of measuring survivability of reconstituted tobacco in the laboratory was devised which is giving encouraging preliminary results. This could be used a s a rapid screening device for samples before running the selected samples through the Semiworks to determine survivability. The laboratory method selected the same ASTA samples for parity with RCB as were selected by Semiworks processing.

Work is in progress to measure the rate of pectin release from different tobacco blends and their components of different particle sizes and also their bulk densities. This work was initiated in response to TMCI concerns about the effect of these variables on materials handling and process operation.

C. **Plans**:

Establish the reproducibility of the laboratory impact tester to measure filler survivability.

Determine an optimum release agent formulation to improve sheet doctoring from the casting belt for improved filler survivability.

Complete the determination of the bulk density of different blends and particle sizes on material handling characteristics.

Complete the determination of the rate of pectin release from different blends and particle sizes.

Complete the subjective analysis of ASTA products.

Determine the reason for the analytical disparity of TSA and PM which exists for propylene glycol and glycerin in ASTA product.

Support TSA in any future ASTA trials.

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